

REMARKS

Applicant respectfully requests re-consideration of the application in view of the arguments presented below.

Summary of Office Action

Claims 1-30 are pending.

Claims 1-19 were withdrawn from consideration.

Claims 20-30 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,414,541 of Patel, et al. ("Patel") in view of U.S. Patent Publication No. 20020041726 A1 of Thackara ("Thackara").

Comment on Applicant's Traversal of Restriction Requirement

The restriction requirement was previously traversed. Group I (claims 1-19) was drawn to a method of fabricating an optical cross connect. Group II (claims 20-30) is drawn to an optical cross connect apparatus. As previously noted by applicant, the Examiner is obligated to demonstrate that the product *as claimed* can be made with a materially different process (i.e., from that claimed). The Examiner's argument relied on the fact that the apparatus (Group II) could be made using any of a number of techniques including chemical etching, deposition, etc. Claim 1 of Group I, however, is not limited to any such techniques and cannot reasonably be interpreted by the Examiner to exclude any of the specified techniques. The Examiner still has not demonstrated that the product as claimed (e.g., claim 20) can be made with a materially different process from that claimed (e.g., claim 1). Applicant maintains that the restriction requirement is improper and should be withdrawn.

Response to 35 U.S.C. § 103 rejection

Claims 20-30 were rejected as being unpatentable over Patel in view of Thackara. Applicant submits that claims 20-30 are patentable in view of the cited references.

The Examiner has stated:

Patel disclose an optical switch device comprising a first planar layer, a second planar layer and a plurality of optical switch wherein the optical switches permit optically coupling any optical path of the first planar layer with an optical path of the second planar layer. The optical switch array is a liquid crystal optical switch.

(09/01/2005 Office Action, p. 3)

Applicant traverses the Examiner's characterization of Patel, at least in part. Patel discloses an optical switch. The switch comprises a plurality of layers, however, these layers do not comprise a plurality of optical paths as suggested by the Examiner's statements. The switch is a 1X2N switch capable of directing a single beam to one or more of 2N laterally separated spatial locations, where N is dictated by the number of layers and biasing sources for the switch.

Patel's switch receives a single beam 24 as an input incident upon layer 14. The switch generates an output beam (58, 64) at one of a plurality of mutually exclusive locations in accordance with the biasing provided. (Patel, col. 3, lines 4-39; col. 5, lines 14-26; col. 6, line 65 - col. 7, line 9; Fig. 1, Fig. 3, Table 1). Applicant has not found any support for the proposition that the input or output beams are being coupled to planar layers. To the contrary, Patel notes that the miniaturization of the switch is limited by the need to maintain a minimum required lateral spacing of the output beams required to couple the switched beam to separate optical channels, such as optical fiber. *An optical fiber is not a planar layer.*

As noted by Patel, the switch is a spatial multiplexer or demultiplexer (Patel, col. 9, lines 58-63). Although a multiplexer/demultiplexer might permit one to couple one input beam to one of N spatial locations (associated with an optical path), there is no teaching or suggestion as to how the laterally distinct spatial locations of a plurality of switches are coupled to each other to permit coupling the input beam of any switch to any of the collective plurality of optical paths. For example, if $m = 2$ such that there are two input beams and two switches, how does the Examiner propose coupling the switches to permit coupling any input optical path to any output optical path? Applicant respectfully submits that Patel does not teach or suggest either (1) first and second planar layers comprising m and n optical paths, respectively; OR (2) a

plurality of optical switches that permit coupling any of the m optical paths to any of the n optical paths

Thackara includes a disclosure of formation of an optical cross connect from a planar waveguide and a plurality of planar waveguide switches. Optical fibers are bonded to the input edges of the cross-connect. The planar waveguide switches are arranged into rows and columns. By selectively turning switches on or off in the rows and columns, the input beam from one optical fiber can be directed to an output beam associated with another optical fiber. (Thackara, pars. 42, 45; Fig. 1, 3, 4). Applicant respectfully submits that there is a single planar waveguide and thus Thackara does not teach or suggest either (1) first and second planar layers comprising m and n optical paths, respectively; OR (2) a plurality of optical switches that permit coupling any of the m optical paths to any of the n optical paths.

Applicant is also uncertain as to how the Examiner proposes combining the switches of Patel with the single plane waveguide of Thackara in a workable manner that teaches or discloses the claimed elements.

Applicant respectfully submits that *none of the cited references, alone or combined, teaches or suggests either (1) first and second planar layers comprising m and n optical paths, respectively; OR (2) a plurality of optical switches that permit coupling any of the m optical paths to any of the n optical paths.*

In contrast, claim 20 includes the language:

20. An optical cross connect apparatus, comprising:
a first planar layer comprising m optical path(s);
a second planar layer comprising n optical path(s); and
an optical switch array comprising a plurality of optical switches,
wherein the optical switches permit optically coupling any optical path of the first planar layer with any optical path of the second planar layer.

(Claim 20)(*emphasis added*)

Thus claim 20 is patentable over the cited references. Given that claims 21-30 depend from claim 20, applicant submits claims 21-30 are likewise patentable over the cited references.

Applicant respectfully submits that the 35 U.S.C. § 103 rejections have been overcome.

Conclusion

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at (512) 858-9910.

Respectfully submitted,

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William D. Davis
William D. Davis
Reg No. 38,428